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Research Program on the

ORGANIZATION AND MANAGEMENT OF R AND D

Effort Allocation by Research and Development Managers

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ABSTRACT

Four basic areas of possible influence have been investigated and found to bear some relationship with an engineering supervisor's allocation of time: the individual himself, in terms of his personal job interests and desires; his perception of his superior's desires in terms of time allocation; a set of role and task requirements manifest in his perception of how he ought to spend his time; and several structural characteristics of the organization. A clearer understanding of how an engineering supervisor allocates his time, in light of these pressures, would seem to be important if progress is to be made toward the more efficient utilization of engineering and scientific personnel.

INTRODUCTION

The first level supervisor occupies a position of particular interest to students of organizational life because of this position's boundary situation. The juncture between the responsibilities and activities of an engineer and those of an engineering supervisor is perhaps even greater than that between a factory worker and the production foreman. The latter has been called the "man in the middle". First level engineering supervisors have been described as having to "face in two directions; they must understand and speak two languages. As participants in the broader decision making processes of the Corporation--they 'internalize' the norms of the business enterprise. But as scientists and managers of scientists, they need to show an understanding of, and respect for, professional goals. They have pressing upon them the expectations of two different roles."

Not only is the first-level engineering supervisor under pressure from groups with conflicting values, he may simultaneously be involved in the personal anxieties of a significant career choice decision. He must not only face in two directions, he must do so while being "pulled" by conflicting reference groups.

One expression of how this situation is being dealt with is the manner in which he utilizes his time. This study was undertaken to gain some understanding of why the first level engineering supervisor makes his daily time allocation decisions as he does. Another words: why does the engineering supervisor spend his time as he does? Specifically, the study examines four hypotheses:

1. A relationship exists between an individual's effort allocation and his personal job interests and desires.
2. A relationship exists between an individual's effort allocation and his perception of how his superior wants him to allocate his time.

3. A relationship exists between an individual's effort allocation and his conception of the role requirements of the job.
4. A relationship exists between an individual's effort allocation and two specific job characteristics--i.e.: size of group and nature of the work performed.

SETTING

The organization chosen for study was one of several subsidiary divisions of a large national electronics firm. It was engaged, primarily, in design and development work for the Department of Defense and employed approximately 800 engineers, technicians and support personnel. Its internal structure followed the typical pattern of "Laboratories" divided into "Departments", with these in turn subdivided into "Sections". The sections ranged in size from one or two engineers reporting to the ection Head to a section with fifty-five people reporting to the Section Head.

While the work of the overall Division was predominantly geared to development work rather than "basic research"[1], Division Management considered the work as ranging from "engineering" through a "mixture of research and engineering", to "research"; and so categorized the various laboratories.

The focus of this study was on the Section Head[2] (the first formal level of supervision); however, data was also obtained from both Department Managers and Laboratory Managers. In each case we sought to determine information about the effort allocation of these technical supervisors which would permit a test of the hypotheses.

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[1] a separate division conducted "basic research" for the company.

[2] hereafter abbreviated "SH".

MEASUREMENT TECHNIQUES

An activity questionnaire was developed to obtain data on supervisors' perceptions[3] of their own effort allocation. After being pretested with twelve Section Heads, to determine if the categories were meaningful, the questionnaire reproduced in Appendix I was adopted.[4] This questionnaire reflects the view that an engineering supervisor's activities can be classified into five major categories across 22 sub-categories. The analysis reported in this paper deals with the five major categories, which are as follows:

Major Category

I	Maintaining and Building Personal Skills
II	Contributing Personal Skill to Technical Job at Hand
III	Personnel Activities
IV	Public Relations Type Activities
V	Managing the Work Group

The questionnaire was administered to 57 SH's, 29 Department Managers--DM's--(second level supervision) and 8 Laboratory Managers--LM's--(third level supervision). Altogether it was administered five times utilizing

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[3] Lee E. Danielson discusses the question of "perception" vs. "reality" and he concludes: (4,p.1)"..and it (his particular study) centers on the actual perceptions of the interviewees rather than bare statistics or armchair philosophizing. Perceptions were chosen because a person's actions and reactions are based on his interpreation of the real, or objective, worlds. For example, if a person feels, or perceives, that he is treated unjustly, regardless of the objective situation, he will react as a mistreated person" (emphasis added).

[4] Only minor changes were necessary. In general, the SH's found the categories understandable, mutually exclusive and adequate to encompass all activity.

a different frame of reference each time. Thus, all levels were asked to estimate how they:

"Do" spend their time
"Should" spend their time
Would "Like to" spend their time
Think their supervisor "Wants them to" spend their time
"Want their own subordinates to" spend their time.[5]

It was necessary to identify subjects in order to permit a comparison of how they did spend their time with their superior's estimates of how he wanted his subordinates to spend their time[6]. Only one subject expressed any fear at all of being identifiable and his responses were discarded prior to any data analysis. All other subjects seemed to be enthusiastic and expressed a strong interest in having an opportunity to see the final results.

PRESENTATION OF RESULTS

1. "Does do" SH's Estimates of How They Do Spend Their Time

Table 1 presents the mean values and standard deviations with respect to how 57 SH's estimate they do spend their time across the 5 major and 22 minor categories. Chart A summarizes Table I in graphic form. (Comparable data for 29 DM's and 8 LM's are presented on page 14 of this report.)

The absolute values of these time estimates are subject to the same criticisms with respect to validity as have been raised about most other techniques for measuring effort allocation. The relative magnitudes are undoubtedly more meaningful than the absolute magnitudes. This issue has

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[5] In the case of the SH, this referred to non-supervisory technical personnel; for the DM, to the SH's who reported to the individual DM; and for the LM, to his DM's.

[6] The subjects, obviously, were given a different explanation.

been discussed in detail by Rubin in an unpublished Master's thesis, (22, pp.11-21). The remainder of this paper will deal exclusively with relative time allocations.

2. "Should Do"

In order to determine a SH's perception of how he should spend his time, the following question was asked: "How a person spends his time is influenced by the organization situation. Assuming you could modify the situation, how would you spend your time to best fulfill the responsibilities of your position?"

Table 2 shows the relationship, for the five major categories, between "Does Do" and "Should Do". The degree of association is shown by r, the Pearson Product-moment correlation coefficient. The significance of this association is shown by s and is to be interpreted here and throughout as better than .01 or better than .05 with two-tailed tests.

RELATION OF HOW SH DOES SPEND HIS TIME VS
HOW HE THINKS HE SHOULD SPEND HIS TIME

(N=57)

"Does Do"	vs	"Should Do"	r	s
Bldg. Pers. Skills		Bldg. Pers. Skills	.776	.01
Contrib'g to Tech. Job		Contrib'g to Tech. Job	.629	.01
Personnel Activities		Personnel Activities	.441	.01
Public Relations		Public Relations	.642	.01
Managing Work Group		Managing Work Group	.670	.01

Thus it appears that a SH's perception of how he spends his time is very closely related to how he feels he should spend his time "to best fulfill the responsibilities of his position." It is, however, indicative of the confidence that the subjects felt in the confidentiality of the data that these correlations are significantly different from 1 (except in Category I) at the .05 level.

TABLE 1

SH's ESTIMATES OF HOW THEY DO SPEND THEIR TIME*

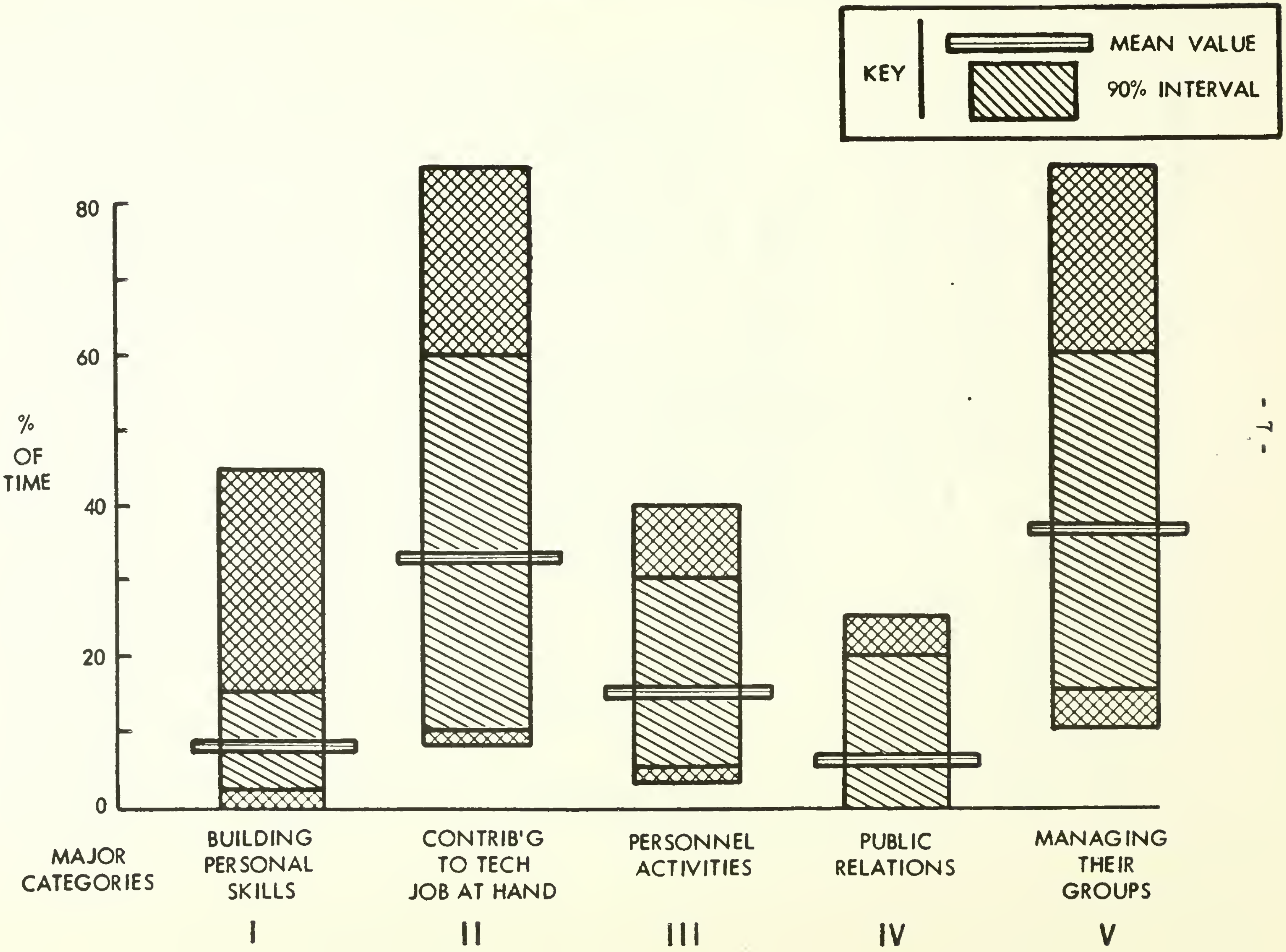
(N=57)

	MEAN %	STANDARD DEVIATION
MAJOR I BUILDING PERSONAL SKILLS	8.246	6.122
a) Technical	3.633	2.517
b) Managerial	1.664	1.391
c) Publication	0.851	1.468
d) Professional Contacts	1.663	1.554
MAJOR II CONTRIB'G TO TECH. JOB	33.193	17.256
a) Proposal Prep.	8.681	6.702
b) Basic Design	10.304	10.474
c) Routine Eng.	3.179	4.353
d) Tech. Reports	4.738	3.558
e) Tech. Services	3. 424	4.232
f) Contract Negot.	2.538	2.681
MAJOR III PERSONNEL ACTIVITIES	15.333	7.406
a) Interpersonal Sup.	3.987	2.554
b) Advising Subs.	7.497	4.906
c) Training Subs.	8.625	2.664
MAJOR IV PUBLIC RELATIONS	5.965	5.278
a) Within Lab.	2.548	2.394
b) Outside Lab.	2.800	3.270
c) Community	0.697	1.381
MAJOR V MANAGING WORK GROUP	37.263	16.230
a) Plan and Org.	10.151	7.211
b) Control	11.272	7.674
c) General Admin.	2.686	1.903
d) Recruiting	2.866	2.091
e) Coordination	7.261	5.247
f) Salary Admin.	2.751	2.109

*For a detailed explanation of the categories, see Appendix I.

CHART A

HOW SH'S DO SPEND THEIR TIME



3. "Likes To Do"

In order to determine how a SH would like to spend his time, the following question was asked: "Suppose you were completely free to choose your activities while on the job, how would you spend your time to best satisfy your own self-intersts?"

Table 3 presents the relationship found between "Does Do" and "Likes To Do" for the five major categories.

TABLE 3

RELATION OF HOW SH DOES SPEND HIS TIME VS
HOW HE WOULD LIKE TO SPEND HIS TIME

(N=57)

"Does Do" vs	"Likes To Do"	r	s
Bldg. Pers. Skills	Bldg. Pers. Skills	.364	.01
Contrib'g to Tech. Job	Contrib'g to Tech. Job	.468	.01
Personnel Activities	Personnel Activities	.124	N.S.*
Public Relations	Public Relations	.352	.01
Managing Work Group	Managing Work Group	.362	.01

With the exception of Category III--Personnel Activities--it appears that a SH's perception of how he spends his time is related to how he would like to spend his time. This relationship, however, is not nearly as strong as that which apparently exists between "does do", and "should do". There is no immediately obvious reason why the predicted relationship does not hold for Category III--Personnel Activities.

4. "Think Supervisor Wants"

Since it is the Department Manager (DM) who decides whether or not one of his subordinates (i.e. SH's) deserves a merit increase in salary, it is reasonable to expect that a SH would like to believe that he spends

his time the way his superior wants him to spend his time.[7]

SH's were asked the following question. "To the best of your knowledge, how do you think your supervisor wants you to spend your time?" The results are presented in Table 4. and support the expectation that SH believes he spends his time as his supervisor would want.[8]

TABLE 4

RELATION OF HOW SH DOES SPEND HIS TIME VS HOW
HE THINKS HIS SUPERVISOR WANTS HIM TO SPEND HIS TIME
(N=57)

"Does Do" vs	"Thinks Supervisor Wants"	r	s
Bldg. Pers. Skills	Bldg. Pers. Skills	.740	.01
Contrib'g to Tech. Job	Contrib'g to Tech. Job	.565	.01
Personnel Activities	Personnel Activities	.417	.01
Public Relations	Public Relations	.483	.01
Managing Work Group	Managing Work Group	.613	.01

5. "Supervisor says he wants"

Department managers were asked, "How do you want your subordinates to spend their time in order to best fulfill the requirements of this position?" Their responses[9] were matched with their SH's estimates of:

a) "How do you spend your time?"

b) "How do you think your supervisor wants you to spend your time?"

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[7] The degree to which a SH's perceptions accurately reflect his superior's desires can be influenced by several factors. This will be discussed in greater detail in the following pages.

[8] These relationships are very significant but it must be observed that a serious bias may have been operating to influence these results. An individual might very well tend to make his superior's wants match very closely with his estimates of how he does spend his time. The actual extent of this bias cannot be quantified. Although, it should be noted that these correlations are lower than those of "should" and "do" measures and again significantly different from 1.0.

[9] A source of bias introduced here concerns the fact that the (continued)

These results are presented in Tables 5 and 6 and are summarized in Chart B for Categories II and V.

TABLE 5

RELATION OF HOW SH DOES SPEND HIS TIME VS HOW HIS SUPERVISOR SAYS HE WANTS HIM TO SPEND HIS TIME

(N=48)*

"Does Do:	"Supervisor Says Wants"	r	s
Bldg. Pers. Skills	Bldg. Pers. Skills	.011	N.S.
Contrib'g to Tech. Job	Contrib'g to Tech. Job	.108	N.S.
Personnel Activities	Personnel Activities	.042	N.S.
Public Relations	Public Relations	.093	N.S.
Managing Work Group	Managing Work Group	.016	N.S.

TABLE 6

RELATION OF HOW SH THINKS HIS SUPERVISOR WANTS HIM TO SPEND HIS TIME VS HOW HIS SUPERVISOR SAYS HE WANTS HIM TO SPEND HIS TIME

(N=48)*

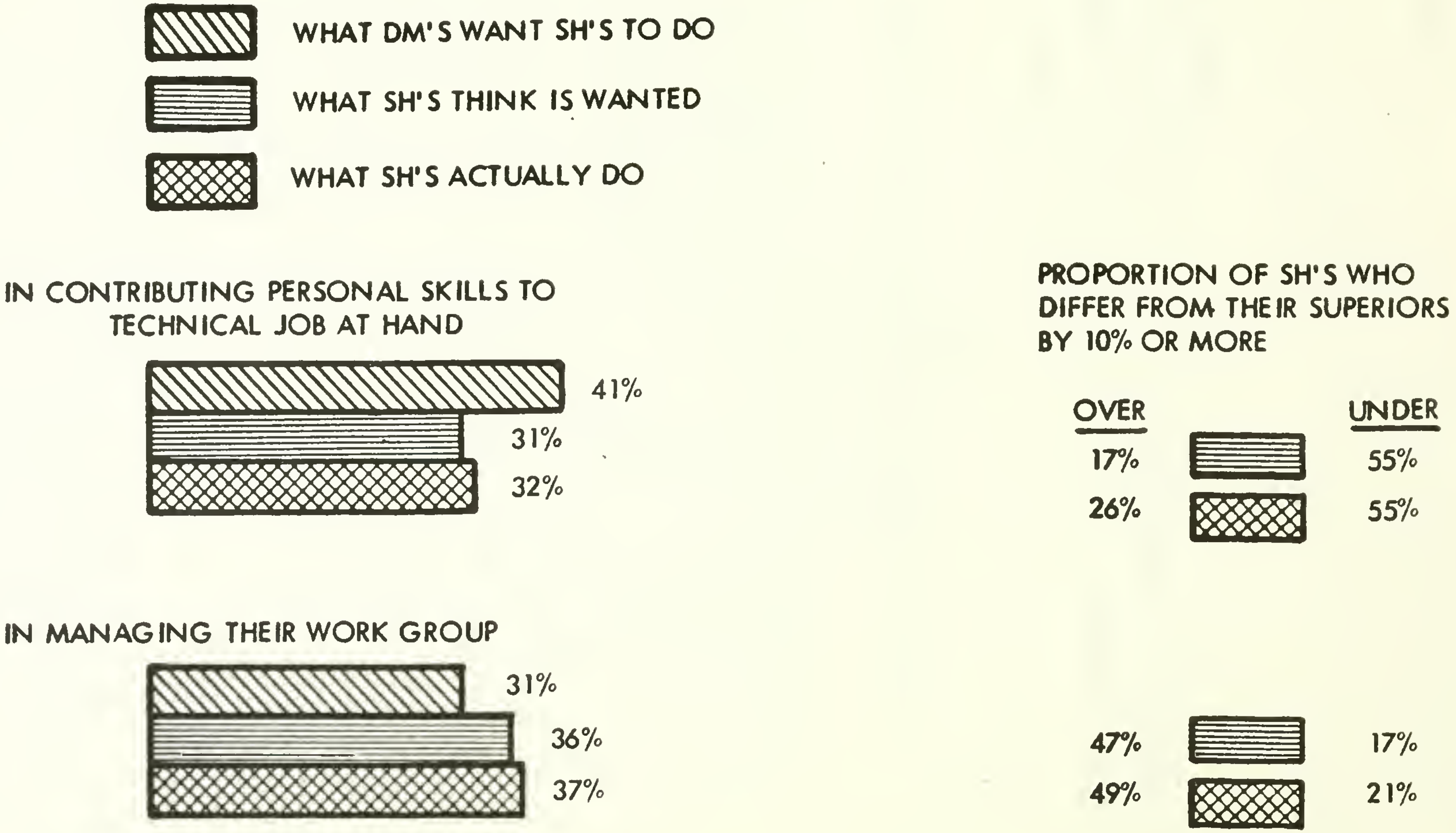
"Thinks Supervisor Wants"	"Supervisor Says Wants	r	s
Bldg. Pers. Skills	Bldg. Pers. Skills	.035	N.S.
Contrib'g to Tech. Job	Contrib'g to Tech. Job	.042	N.S.
Personnel Activities	Personnel Activities	-.139	N.S.
Public Relations	Public Relations	-.110	N.S.
Managing Work Group	Managing Work Group	+.147	N.S.

*The sample size is reduced because it was not possible to match all SH's with their DM's.

(footnote continued) DM's were only asked to estimate, on the average, how they wanted all their SH's to spend their time. It is certainly possible that a DM might want different things from different subordinates. This is a factor which cannot be accounted for with this approach but the individual discrepancies found were so wide that it seems reasonable to believe that a disparity does exist. No DM expressed difficulty with answering the question, which referred implicitly (at least) to all of his subordinates. Furthermore, there is no reason to believe that a systematic bias does exist--e.g., that the SH's questioned in the study were atypical of their DM's departments.

CHART B

COMPARISON – MEAN VALUE OF



It was thus impossible to conclude that a supervisor's expressed desires appear to be in any way related to either his subordinates' perception of how they spend their time or how they think their superiors want them to spend their time.

6. Size of Section

The relationship between the number of engineers a SH must supervise and his estimates of how he spends his time was investigated and the results are presented in Table 7.

TABLE 7

RELATION OF HOW SH DOES SPEND HIS TIME VS THE SIZE OF THE SECTION HE SUPERVISES

(N=57)

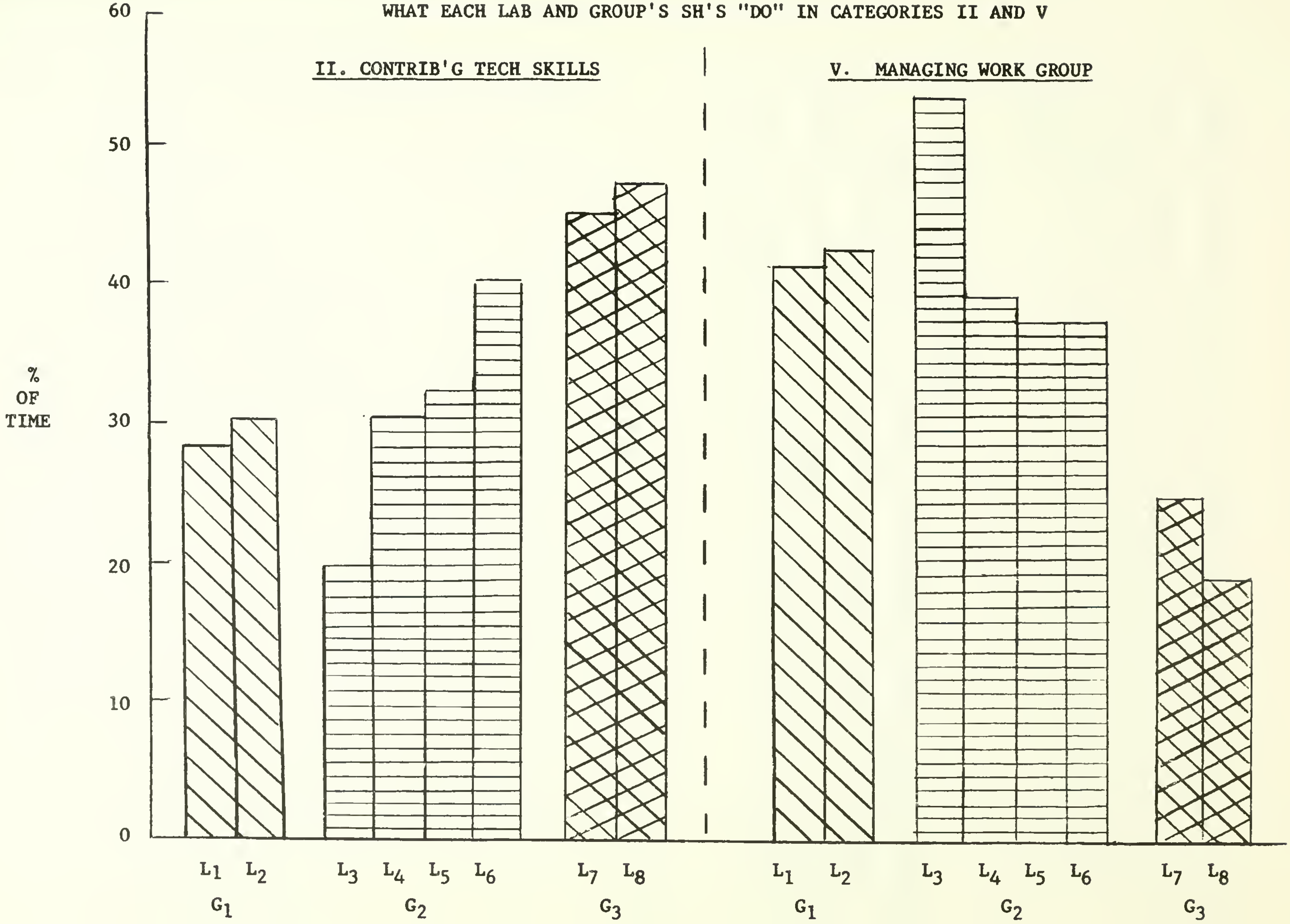
"Does Do"	r	s
Bldg. Pers. Skills	-.115	N.S.
Contrib'g to Tech. Job	-.318	.05
Personnel Activities	.118	N.S.
Public Relations	-.220	N.S.
Managing Work Group	.399	.01

How a SH spends his time in Categories II and V is seen to be significantly related to the number of engineers he must supervise. As the size of his section grows, a SH feels that he actually spends less time "contributing personal skills to the technical job at hand" and feels that he devotes a greater percentage of his time to "managing the work group".

7. Nature of the Work Being Performed

The sections studied were organized into eight laboratories. These laboratories could be classified, according to management, into the following three groups: G_1 does primarily engineering; G_2 does work which lies

CHART C



WHAT EACH LAB AND GROUP'S SH'S "DO" IN CATEGORIES II AND V

somewhere between engineering and research; and G_3 does primarily research. Chart C shows that as one moves from G_1 to G_2 to G_3 (i.e., from engineering to research), SH's spend more time "contributing personal skills to the technical job at hand" while they spend less time "managing the work group".

8. Inter-level Comparisons

Not surprisingly, the higher level managers report spending relatively more time in administrative activities and less in technically oriented activities than do lower level managers (Table 8 and Chart D). Furthermore, a "gap in communications" is found to exist between DM's and LM's. This result is summarized in Chart E.

TABLE 8

HOW SH's, DM's, and LM's ESTIMATE THEY DO SPEND THEIR TIME*

	SH's (N=57)		DM's (N=24)		LM's (N=8)	
	MEAN %	STANDARD DEVIATION	MEAN %	STANDARD DEVIATION	MEAN %	STANDARD DEVIATION
MAJOR I BUILDING PERSONAL SKILLS	8.246	6.122	8.897	5.944	5.500	3.279
a) Technical	3.633	2.517	3.590	2.382	1.862	1.626
b) Managerial	1.664	1.391	2.262	1.503	1.350	1.543
c) Publication	0.851	1.468	0.722	1.018	0.356	0.653
d) Professional Contacts	1.663	1.554	2.322	3.423	1.931	1.780
MAJOR II CONTRIB'G TO TECH. JOB	33.193	17.256	24.586	12.864	13.000	3.808
a) Proposal Prep.	8.681	6.702	8.891	5.959	5.894	2.590
b) Basic Design	10.304	10.474	6.155	6.944	1.331	0.974
c) Routine Eng.	3.179	4.353	0.741	0.815	0.	0.
d) Tech. Reports	4.738	3.558	2.884	3.052	1.275	1.004
e) Tech. Services	3.424	4.232	2.547	2.274	1.181	0.941
f) Contract Negot.	2.538	2.681	3.316	2.660	3.319	3.158
MAJOR III PERSONNEL ACTIVITIES	15.333	7.406	14.862	6.821	16.250	10.698
a) Interpersonal Sup.	3.987	2.554	5.164	2.874	5.269	5.984
b) Advising Subs.	7.497	4.906	6.190	4.450	6.431	3.282
c) Training Subs.	8.625	2.664	3.509	2.597	4.550	3.556
MAJOR IV PUBLIC RELATIONS	5.965	5.278	7.379	5.448	13.750	8.197
a) Within Lab.	2.548	2.394	2.714	2.414	2.844	4.189
b) Outside Lab	2.800	3.270	3.869	3.900	7.969	4.714
c) Community	0.697	1.381	0.797	1.271	2.937	4.805
MAJOR V MANAGING WORK GROUP	37.263	16.230	44.276	16.349	51.500	12.379
a) Plan and Org.	10.151	7.211	12.886	9.086	15.494	6.133
b) Control	11.272	7.674	12.323	5.927	13.412	5.759
c) General Admin.	2.686	1.903	4.702	3.763	5.136	3.744
d) Recruiting	2.866	2.091	3.326	1.841	4.114	1.467
e) Coordination	7.261	5.247	7.655	4.978	9.806	2.851
f) Salary Admin.	2.751	2.109	3.349	1.827	3.537	1.113

*For a detailed explanation of the categories, see Appendix I.

CHART D

HOW LM'S, DM'S, SH'S DO SPEND THEIR TIME

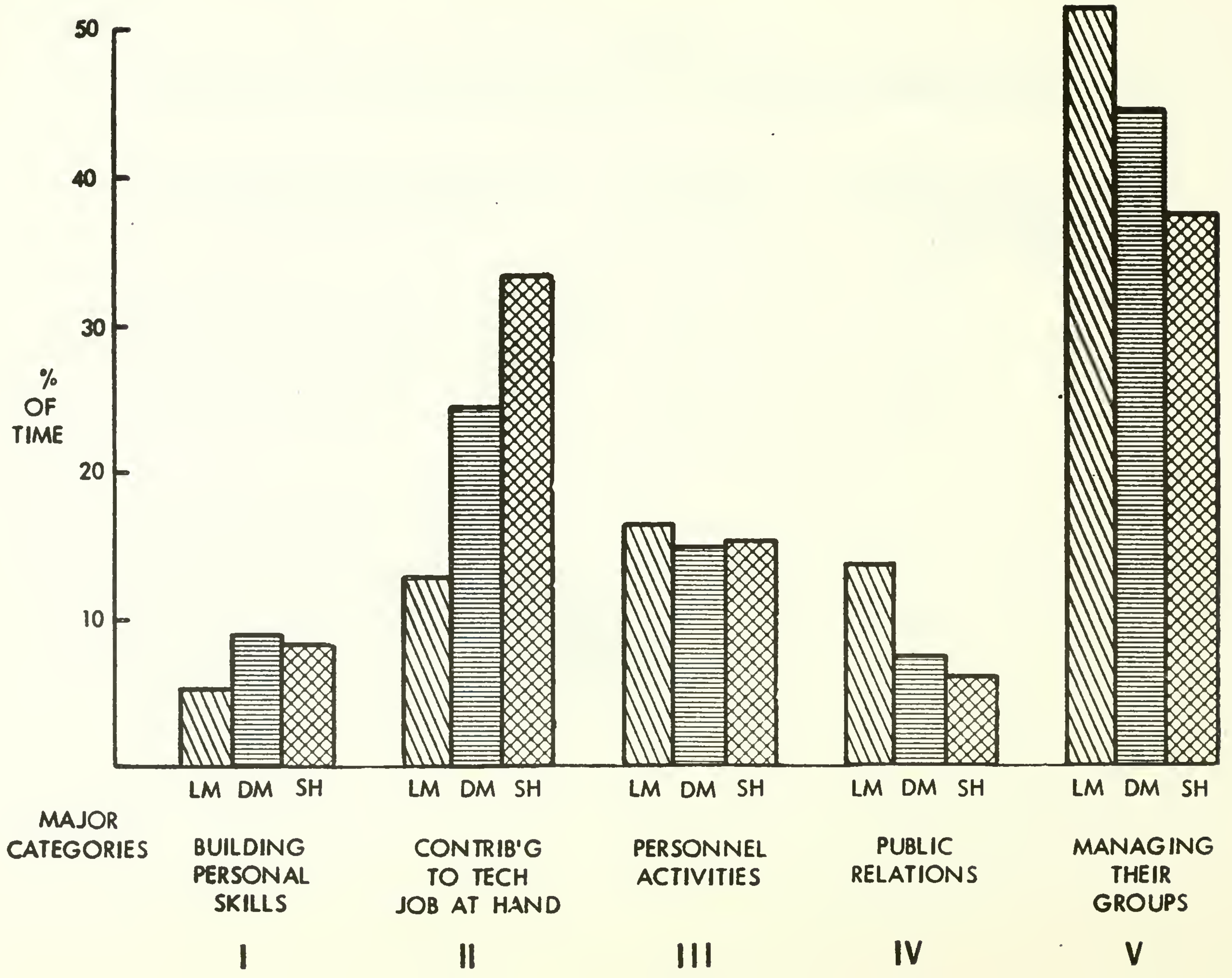
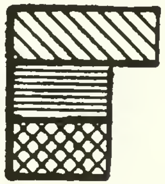
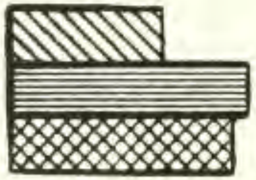


CHART E

COMPARISON OF DM'S TIME ALLOCATION WITH WHAT THEY THINK IS WANTED AND WHAT LM'S WANT



In Contributing Personal Skills to Technical Job at Hand	Mean Per Cent of Time	Per Cent of DM's who Differ from Their Superiors by 10% or More	
		Over	Under
What LM's want DM's to do	32		
What DM's think is wanted	25	9%	61%
What DM's actually do	25	17%	52%



In Managing Their Work Group	Mean Per Cent of Time	Over	Under
What LM's want DM's to do	31		
What DM's think is wanted	46	65%	4%
What DM's actually do	45	52%	17%

SUMMARY AND CONCLUSIONS

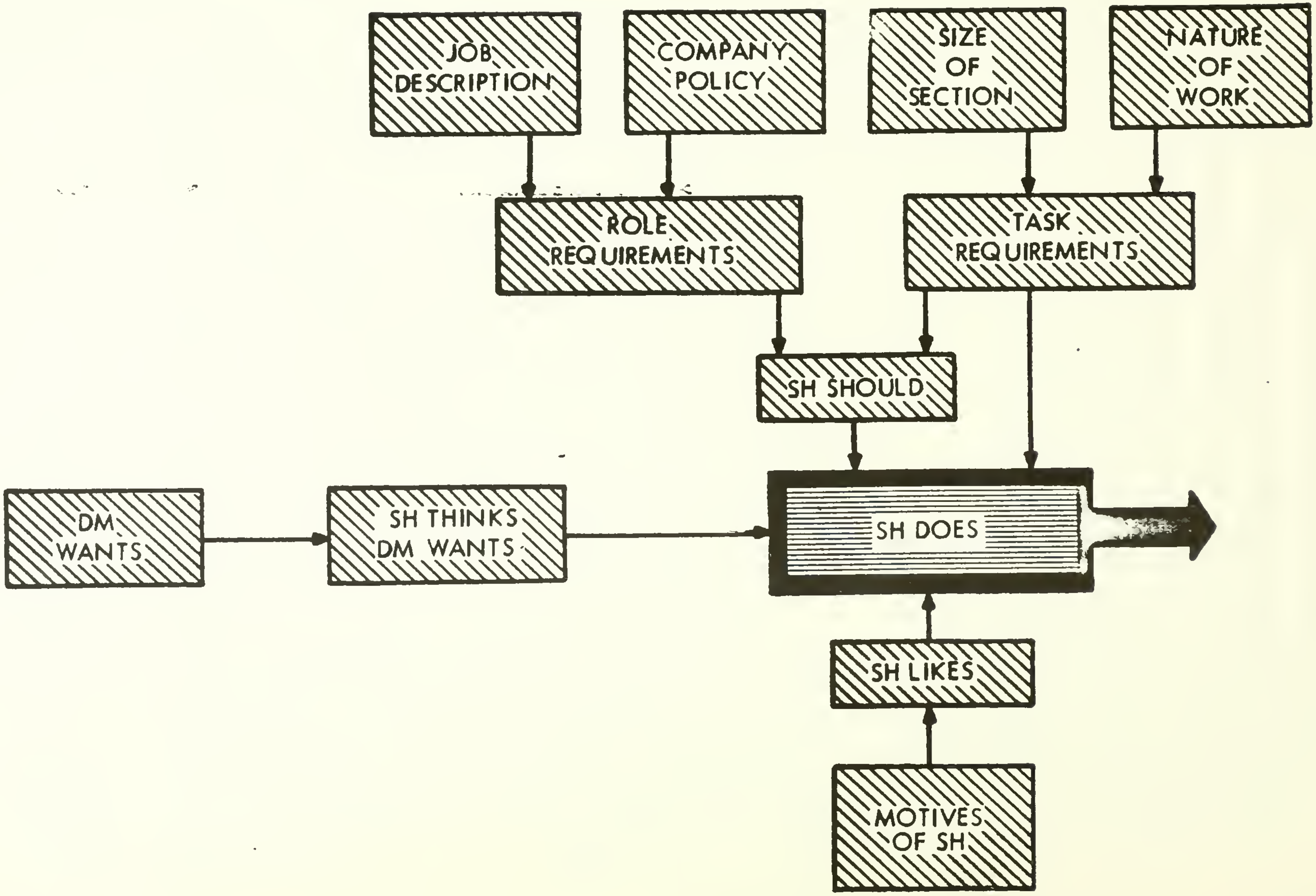
The preceding sections have sought a better understanding of the factors related to the allocation by first-level engineering supervisors of their time to the activities they are called upon to perform in the course of their jobs. Four factors have been investigated: the individual's personal job interests and desires; his perception of his superior's desires; a set of role and task requirements manifest in his perception of how his time ought to be spent; and several structural characteristics of the organization. These areas can be summarized in a hypothetical model of the variables affecting what a SH does (see Chart F).

The fact that SH's did not have an accurate conception of how their superiors wanted them to apportion their time raises the question of why such a discrepancy exists and what is its impact. Is it simply due to the fact that the superior-subordinate pairs had never discussed the matter--at least not in the terms employed in the questionnaire? This seems possible. Work tends to be divided according to projects or technology (function); therefore, in industrial laboratories people tend to think about amount of design work relative to testing for a particular task more than about the apportionment of time for an engineer.

It is due to defensive distortion and misperception by one or both members of the dyad? Perhaps the subordinate does not "hear correctly" in order to reduce some conflict between what he wants to do or feels he must do and what his superior wants him to do. The superior may distort his "wants" for one reason or another. This is purely speculative. The point is that until we know the cause of the misconception, we cannot begin to evaluate its impact or design steps to alter the situation.

CHART F

VARIABLES AFFECTING WHAT SH DOES



The direction of the misconception, with the superior wanting a greater technical contribution and the sub-manager thinking his superior wants a greater managerial contribution, raises related questions: Is this the rather natural over statement of status by a person who may be somewhat ambivalent about moving from one work role (engineering) to another (management)? Is this somehow related to a reward system that encourages people to see themselves as managers? Is this a reflection of a need by the superior to rely on his subordinates for technical knowledge? The whole problem of role conflict and role expectation appears to be a fruitful area for further research.

The correlation between section size and estimates of actual time allocation causes one to ask whether it is better to have more smaller sections with "working" supervisors, or fewer larger sections managed by "non-working" managers. In the particular organization studied, a member of higher management said, "Inevitably, the more successful engineers tend to be promoted into supervisory positions....." To the extent that this is common practice, the data suggest that adjustments of section size can be used to insure that top flight technical talent is not lost to the organization. Conversely, if the desire is to use the SH position to train the future managers of the laboratory, rotation into a larger section may be a way to wean them away from technical activities. Again the data permit no comment about what policy is best but do demonstrate the impact that structural characteristics may have upon patterns of effort allocation and organizational goals.

The model presented here of the variables affecting what an engineering supervisor does is by no means complete.[10] There are other variables, such

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[10] Additional data analyses are presently underway, for example, to examine the effect of reclassifying the categories of effort allocation. (continued)

as organizational rewards and punishments, which are undoubtedly at work. The model does seem to suggest, however, that how an engineering supervisor spends his time is the composite result of a large number of complex variables acting concurrently. A better understanding of all these variables, the mechanisms through which they operate, and the effects they have on individual performance is needed in order to cope effectively with the problem of the efficient utilization of engineering and scientific personnel.

(footnote continued) Multiple regression and partial correlation analyses are also being performed on the data presented in this paper.

APPENDIX I

The purpose of the attached questionnaire is to gain research data as to how scientific personnel at varying organization levels allocate their time while on the job among different activities.

It is suggested that you STOP RIGHT NOW AND READ THE ATTACHED PAGES. After gaining an idea of the available activity categories, proceed according to the following instructions:

INSTRUCTIONS

STEP 1 Estimate the percentage of your time during a TYPICAL month of the year which you spend on each of the five major categories, i.e.:

I. MAINTAINING AND BUILDING PERSONAL SKILLS
II. CONSTRIBUTING PERSONAL SKILL TO TECHNICAL JOB AT HAND
III. PERSONNEL ACTIVITIES
IV. PUBLIC RELATIONS TYPE ACTIVITIES
V. MANAGING THE WORK GROUP

Base your estimates on the total time you spend ON THE JOB (including overtime, paid and unpaid), but disregard personal time (toilet, meals and relaxation). Record your estimates in COLUMN 1; the column total should equal 100%.

STEP 2 Within each of the five major categories there is a series of specific activities. Apportion (percentagewise) the total you spend on the major category over its specific activities. Record your estimate in COLUMN 2. For each major category, the estimates in COLUMN 2 should add up to 100%.

EXAMPLE

	COL. 1	COL.2
I. GOING FISHING	30%	
a) fly casting		50%
b) bait casting		0%
c) surf casting		25%
d) trolling		25%
		100% TOTAL

NOTE: It is recognized that many activities accomplish more than one purpose. Your time allocation should reflect the activity's primary purpose.

ACTIVITY QUESTIONNAIRE

Col. 1 Col. 2

MAJOR I. MAINTAINING AND BUILDING PERSONAL SKILLS ______

a) Technical--e.g. reading technical publications, attending in-plant technical lectures ______
b) Managerial--e.g. reading articles on leadership, attending in-plant lectures on human relations ______
c) Publication--e.g. writing for technical journals, preparation and presentation of papers ______
d) Professional Contacts--e.g. maintaining contacts with other scientific personnel. ______

100% TOTAL

MAJOR II. CONTRIBUTING PERSONAL SKILL TO TECHNICAL JOB AT HAND ______

a) Proposal Preparation--e.g. development of technical concepts, development of cost estimates, preparation of proposal documents ______
b) Basic Design--e.g. searching for background data, originating and developing ideas, including those tests, experiments and calculations that are intimately associated with the design process
c) Routine Engineering--e.g. standardized tests, esperiments and straightforward calculations, charts and drawings ______
d) Technical Reports--e.g. writing up reports, including interim and final Technical Reports and patent applications ______
e) Technical Services--e.g. providing technical advice and trouble-shooting service to production, to venders, to customer (Field Engineering) ______
f) Contract Negotiations--e.g. including pre-proposal negotiations, formal contract negotiations, extension to the contract scope and renegotiations ______

100% TOTAL

MAJOR III. PERSONNEL ACTIVITIES ______

a) Interpersonal Supervision--e.g. counseling, discussing subordinates' personal problems, handling complaints, fostering morale ______
b) Advising Subordinates--e.g. providing technical guidance and coaching on technical job at hand ______
c) Training Subordinates--e.g. developing subordinates' basic skills and knowledge ______

100% TOTAL

MAJOR IV. PUBLIC RELATIONS TYPE ACTIVITIES ______

a) Within own Laboratory but outside own group--e.g. coordination not related to specific technical job at hand, explaining the group's function to others and extablishing contacts and goodwill ______
b) Within the Company but outside own Laboratory--e.g. coordination not related to specific technical job at hand, explaining the group's function to others and establishing contacts and goodwill ______
c) Community relations--e.g. United Func Campaign, addressing community groups and organizations, escorting visitors and survey teams ______

100% TOTAL

	Col. 1	Col. 2
MAJOR V. MANAGING THE WORK GROUP	______	
a) Planning and organizing--e.g. manpower forecasts, scheduling, budgeting, determining work assignments		______
b) Control--e.g. monitoring work progress, reviewing the work of the group, review and appraisal of bid proposals, checking actual costs against budget		______
c) General Administration--e.g. routine correspondence, preparation of supplies requisitions and travel expense reports, expediting of materials		______
d) Recruiting--e.g. interviewing job applicants, preparing job requirements and coordinating needs with Personnel Department		______
e) Coordination--e.g. receiving instruction from own supervisor, writing formal progress reports, making informal reports, attending design review and systems coordination meetings		______
f) Salary Administration--e.g. merit reviews and performance evaluation, preparing and discussing salary increase recommendations		______
		100% TOTAL
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	GRAND TOTAL 100%	

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